

There is much general matter at the beginning and end of the work, including several tables of geographical distribution.

Dr. Arnold Pagenstecher, of Wiesbaden, is as well known to entomologists as his cousin is known to the outside world as an oculist; and the publication before us is an elaborate monograph of the butterflies of an interesting part of the Papuan fauna, some of the islands of which were visited by the French exploring expeditions about 60 or 70 years ago, when various butterflies were collected there. At that time, some of the islands were known as New Britain and New Ireland, but they have received other names since they came into German hands. It is not to be expected that so distant and outlying a fauna should contain many species which are also found in Europe: the only species that strikes us, on glancing through the paper, is *Plebeius boticus*; but this is rather an outlying European representative of a tropical group than a specially European species. The present paper on the Butterflies is to be followed, later, by another on the Moths, which entomologists will doubtless look forward to with much interest.

The third work on our list relates to the Order Orthoptera, and consists of lists of species captured in Batchian, Borneo, Celebes, Halmahera (otherwise called Gilolo), Ternate, and Java, with descriptions of numerous new species; and tables are given of the species included in some of the genera. The descriptions strike us as being, in many cases, rather too short to be quite sufficient for identification; but the measurements are carefully given in all cases, and a considerable number of species are figured, sometimes the whole insect, and sometimes only a leg or pronotum. This work will be very useful to students of Orthoptera, who, however, we fear are not too numerous at present.

*New Zealand Moths and Butterflies (Macro-Lepidoptera).* By G. V. HUDSON, F.E.S. (Author of 'An Elementary Manual of New Zealand Entomology'). With 13 Plates. 4to. 1898. West, Newman, & Co. Pp. xix, 144.

THE Fauna of New Zealand, as might be expected from its outlying position, is comparatively poor, but extremely interesting from the number of indigenous species absolutely peculiar to the islands. As regards Lepidoptera, the first attempt to bring together the scattered information existing on the subject was made by Dr. A. G. Butler in 1874, who included an account of the order in the "Voyage of the 'Erebus' and 'Terror,'" enumerating 318 species. Of these, 132 were Macro-Lepidoptera, and are represented by 234 species in Mr. Hudson's work, the number of species detected in New Zealand having been nearly doubled by the present time. Consequently we shall probably be not very far wrong if we assume the total number of New Zealand species now known to be about 600, which at a moderate estimate we may expect may ultimately be raised to 800, or perhaps even 1000. The majority of these are moths. Of butterflies Dr. Butler enumerates 9, of which one at least is very doubtful; Mr. Hudson admits 15, and mentions 5 other reputed species, 3

being possibly indigenous and the other 2 accidentally introduced European species. Of the 15, 1 (*Anosia erippus*, Cram.) is introduced, 5 are Australian, and the remaining 9 (or 10 if *Chrysophanus Feredayi*, Bates. is distinct from *C. salustius*, Fabr.) are species absolutely peculiar to New Zealand.

There is a brief but useful introduction dealing with Metamorphosis, Anatomy, Origin of Species, Classification, and Geographical Distribution. In Classification Mr. Hudson follows Mr. Moyrick's system, of which we need only say here that it is too soon yet to predict how far its innovations are likely to be ultimately accepted by entomologists, especially as regards the propriety of placing the butterflies in the middle of the moths, instead of as a perfectly separate group. Even as regards the Hesperiidæ (which, by the way, are not represented in New Zealand) the connecting links between butterflies and moths are so few and uncertain that it appears to many entomologists that to place the butterflies in the middle of the moths is an innovation only likely to further increase the difficulties of a satisfactory classification of Lepidoptera, which has been recognized for the last century as one of the hardest problems of entomology.

All the species known to the author are figured, the original descriptions of others being copied, and full information is given about habits, localities, food-plants, distribution, &c. An Appendix by Florence W. Hudson contains a brief descriptive list of plants mentioned. The first two plates are plain, dealing with structure and neurulation, the third includes coloured figures of larvæ and pupæ, and the remainder are devoted to perfect insects. The large size of the plates is a great economy in allowing a considerable number of figures to be inserted on one plate. We find as many as fifty-two figures on plate viii., which is devoted to "Notodontinæ," which all lepidopterists will recognize as Geometridæ, an innovation for which Mr. Hudson is not responsible, but which is likely, we are afraid, to remind many entomologists of an uncomplimentary expression which sometimes occurs in Euclid.

In some respects we think that Mr. Hudson should have given fuller information, especially as his book is intended for use in a country where entomological libraries cannot always be easy of access. We think the dates of all the references should have been given throughout, and not only occasionally, and the references themselves should have been fuller. It is not sufficient under *Sphinx convolvuli*, L., to quote merely *Protoparce distans*, Butl., without any clue to where the insect is described and figured, nor any remark whatever on the characters which led Koch and Butler to consider the Australian and New Zealand form of the insect distinct from the European. The references are:—

*Sphinx roseofasciata*, Koch, Indo-Austr. Lep. Fauna, p. 54 (1865).

*Sphinx distans*, Butl. Lep. N. Zealand (Voy. 'Erebus' and 'Terror'), p. 4, pl. ii. fig. 11 (1874).

There is an extraordinary error on p. 104, where *Hypolimnas bolina*, L., is placed in the genus *Anosia*, as if it was congeneric